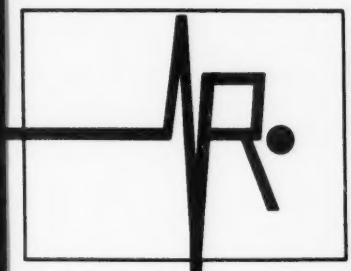

# FREE RADICAL BIOLOGY & MEDICINE

## The Official Journal of the Oxygen Society

CONTENTS AND AUTHOR INDEX
VOLUME 10, 1991

PERGAMON PRESS
New York ■ Oxford ■ Beijing ■ Frankfurt
São Paulo ■ Sydney ■ Tokyo ■ Toronto

# Free Radical Biology & Medicine

The Official Journal of the Oxygen Society

*A Constituent Member of the International Society for Free Radical Research*



**Co-Editor-in-Chief**
*Original research, hypothesis papers*

**Kelvin J. A. Davies**
Institute for Toxicology and Department of Biochemistry
University of Southern California
1985 Zonal Avenue, HSC-PSC 614–616
Los Angeles, CA 90033, USA

**Co-Editor-in-Chief**
*Scientific reviews, survey articles*

**William A. Pryor**
Thomas and David Boyd Professor
Biodynamics Institute
711 Choppin
Louisiana State University
Baton Rouge, LA 70803, USA

**Associate Editor**
*Scientific reviews, survey articles*
**Gary Winston**
Louisiana State University, USA

**International Editorial Board**

**Bruce N. Ames**
University of California–Berkeley, USA

**Steven D. Aust**
Utah State University, USA

**Anne P. Autor**
University of British Columbia, Canada

**Bernard M. Babior**
Scripps Clinic and Research Foundation, USA

**Joseph V. Bannister**
Cranfield Inst. of Technology, UK

**Carmia Borek**
Columbia University, USA

**Donald C. Borg**
Cook College, Rutgers University, USA

**Alberto Boveris**
University of Buenos Aires, Argentina

**John Butler**
Christie Hospital/Holt Radium Institute, UK

**Arthur I. Cederbaum**
Mount Sinai School of Medicine, USA

**Leslie G. Cleland**
Royal Adelaide Hospital, Australia

**Gideon Czapski**
Hebrew University, Israel

**Thomas L. Dormandy**
Whittington Hospital, UK

**James H. Doroshow**
City of Hope National Medical Center, USA

**Ingrid Emerit**
CNRS, France

**Lars Ernster**
University of Stockholm, Sweden

**Ronald W. Estabrook**
University of Texas/Dallas, USA

**Vittorio E. Ferrari**
Zambon and the University of Milan, S.p.A., Roma, Italy

**Robert A. Floyd**
Oklahoma Medical Research Foundation, USA

**Christopher S. Foote**
University of California–Los Angeles, USA

**Henry J. Forman**
Children's Hospital of Los Angeles, USA

**Bruce Freeman**
University of Alabama/Birmingham

**Irwin Fridovich**
Duke University Medical Center, USA

**Bernard D. Goldstein**
Rutgers Medical School, USA

**Robert A. Greenwald**
Logn Island Jewish Hillside Medical Center, USA

**John M. C. Gutteridge**
National Institute for Biological Standards, UK

**Barry Halliwell**
University of London, Kings College, UK

**Hosni M. Hassan**
North Carolina State University, USA

**Osamu Hayaishi**
Osaka Medical College, Japan

**H. A. O. Hill**
Oxford University, UK

**Paul Hochstein**
University of Southern California, USA

**Keith U. Ingold**
National Research Council, Canada

**Manfred L. Karnovsky**
Harvard Medical School, USA

**Norman I. Krinsky**
Tufts University School of Medicine, USA

**William E. M. Lands**
University of Illinois Medical Center, USA

**J. William Lown**
University of Alberta, Canada

**Joe M. McCord**
Webb Waring Lung Institute, Denver, CO, USA

**Lawrence J. Marnett**
Wayne State University, USA

**Ronald P. Mason**
National Institute of Environmental Health Sciences, USA

**Morimitsu Nishikimi**
University of Nagoya, Japan

**Sten Orrenius**
Karolinska Institute, Sweden

**Lester Packer**
University of California–Berkeley, USA

**John E. Repine**
University of Colorado Medical Center, USA

**Catherine Rice-Evans**
Royal Free Hospital School of Medicine, UK

**Giuseppe Rotilio**
City University of Rome, Italy

**Bengt Samuelsson**
Karolinska Institute, Sweden

**Alex Sevanian**
University of Southern California, USA

**Helmut Sies**
University of Düsseldorf, Germany

**Michael G. Simic**
National Bureau of Standards, USA

**Trevor F. Slater**
Brunel University, England

**Harold M. Swartz**
University of Illinois College of Medicine, USA

**Al L. Tappel**
University of California–Davis, USA

**Paul O. P. Ts'o**
Johns Hopkins University, USA

**Fulvio Ursini**
University of Padua, Italy

**Yu. A. Vladimirov**
Moscow State Medical Institute, USSR

**Steven J. Weiss**
University of Michigan, USA

**Christine Winterbourn**
Christchurch School of Medicine, New Zealand



*Journal of Free Radicals in Biology & Medicine* (final issue, Volume 2, Numbers 5/6, 1986) and *Advances in Free Radical Biology and Medicine* (final issue, Volume 2, Number 2, 1986) were merged as of Volume 3, Number 1, 1987, of *Free Radical Biology & Medicine.*

**Publishing, Advertising, and Subscription Offices:** Pergamon Press, Inc., Fairview Park, Elmsford, New York 10523, USA; or, Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, England.

**Published 12 issues per annum, 2 volumes.** *Annual institutional rate* (1991), US$460.00. *Two-year institutional subscription rate* (1991/92): US$874.00. *Personal subscription rate* for those whose library subscribes at the regular rate (1991, Vols. 10–11): US$137.00. A subscription to *Free Radical Biology & Medicine* is a benefit to membership of the Oxygen Society. For information about the society, please contact: Ms. Susan Godber, Editorial Assistant, Oxygen Society/Free Radical Biology & Medicine, Biodynamics Institute, 711 Choppin Hall, Louisiana State University, Baton Rouge, Louisiana 70803-1800, U.S.A. Members of the Society for Free Radical Research may order personal subscriptions at a concessional rate, details of this rate are available upon request. Prices are subject to change without notice. Notify 8 weeks in advance of address change with a copy of the subscription mailing label. *Back Issues:* Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Pergamon Press offices. Subscription rates for Japan include despatch by air and prices are available on application.



Copyright © 1991 Pergamon Press plc

**Copyright Notice.** It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher, if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform, or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording, or otherwise, without permission in writing from the copyright holder.

**Photocopying information for users in the USA.** The Item-Fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries or other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of $3.00 per copy is paid directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970.

**Permission for other use.** The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for copying. Please contact the Subsidiary Rights Manager, Publishing Services, Dept. at either Pergamon Press plc or Pergamon Press, Inc.



*The Item-Fee Code for this publication is:* 0891-5849/91 $3.00 + .00.

⊛™ The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSIZ39.48-1984

# CONTENTS
# Volume 10, 1991

Volume 10, Number 1 1991

CONTENTS


| | | |
|---|---|---|
| **William A. Pryor** | iii | The Radical View |
| | | *Original Contributions* |
| **Raphael Udassin, Ilana Ariel, Yuval Haskel, Nahum Kitrossky, Mordechai Chevion** | 1 | Salicylate as an In Vivo Free Radical Trap: Studies on Ischemic Insult to the Rat Intestine |
| **Paul N. Manson, Richard Jesudass, Louis Marzella, Gregory B. Bulkley, Michael J. Im, Kailash K. Narayan** | 7 | Evidence for an Early Free Radical-Mediated Reperfusion Injury in Frostbite |
| **George N. Smith, Mohammed Taj, Joan M. Braganza** | 13 | On the Identification of a Conjugated Diene Component of Duodenal Bile as 9Z,11E-Octadecadienoic Acid |
| **U. Rafałowska, E. Wałajtys-Rode** | 23 | Peroxidation-Induced Changes of Histamine Metabolism and Transport of Its Precursor Histidine in Rat Brain Synaptosomes |
| **Mark S. Paller, Marsha Patten** | 29 | Hydrogen Peroxide and Ischemic Renal Injury: Effect of Catalase Inhibition |
| **Rosa Pérez, Mónica López, Gustavo Barja de Quiroga** | 35 | Aging and Lung Antioxidant Enzymes, Glutathione, and Lipid Peroxidation in the Rat |
| **Tamaki Yamada, Christine Volkmer, Matthew B. Grisham** | 41 | The Effects of Sulfasalazine Metabolites on Hemoglobin-Catalyzed Lipid Peroxidation |
| **Cora J. Dillard, Miao-Lin Hu, Al L. Tappel** | 51 | Vitamin E, Diethylmaleate and Bromotrichloromethane Interactions in Oxidative Damage In Vivo |
| **Lance S. Terada, Jonathan A. Leff, David M. Guidot, Irene R. Willingham, John E. Repine** | 61 | Inactivation of Xanthine Oxidase by Hydrogen Peroxide Involves Site-Directed Hydroxyl Radical Formation |
| **Jawaid Iqbal, Philip Whitney** | 69 | Use of Cyanide and Diethyldithiocarbamate in the Assay of Superoxide Dismutases |

| | | |
|---|---|---|
| **Terry D. Oberley**<br>**R. G. Allen**<br>**Janice L. Schultz**<br>**L. Jayne Lauchner** | 79 | Antioxidant Enzymes and Steroid-Induced Proliferation of Kidney Tubular Cells |
| **W. H. Koppenol** | 85 | Thermodynamic Considerations on the Generation of Hydroxyl Radicals From Nitrous Oxide—No Laughing Matter |
| | | *Book Review* |
| **William A. Pryor** | 89 | *Gas Chromatography and Lipids*, by William W. Christie |
| | 91 | Announcements & Calendar |
| | I | Oxygen Society News |


Volume 10, Number 2 1991

CONTENTS


| | | |
|---|---|---|
| **William A. Pryor** | iii | The Radical View |
| | | *Original Contributions* |
| **Beatriz Gonzalez Flecha**<br>**Susana Llesuy**<br>**Alberto Boveris** | 93 | Hydroperoxide-Initiated Chemiluminescence: An Assay for Oxidative Stress in Biopsies of Heart, Liver, and Muscle |
| **Michael Katrantzis**<br>**Mark S. Baker**<br>**Christopher J. Handley**<br>**Dennis A. Lowther** | 101 | The Oxidant Hypochlorite ($OCl^-$), a Product of the Myloperoxidase System, Degrades Articular Cartilage Proteoglycan Aggregate |
| **William G. E. J. Schoonen**<br>**A. Handayani Wanamarta**<br>**Joan M. van der Klei-van Moorsel**<br>**Cornelis Jakobs**<br>**Hans Joenje** | 111 | Characterization of Oxygen-Resistant Chinese Hamster Ovary Cells. III. Relative Resistance of Succinate and α-Ketoglutarate Dehydrogenases to Hyperoxic Inactivation |
| **William A. Antholine**<br>**B. Kalyanaraman**<br>**Jeffrey A. Templin**<br>**Robert W. Byrnes**<br>**David H. Petering** | 119 | Spin-Trapping Studies of the Oxidation–Reduction Reactions of Iron Bleomycin in the Presence of Thiols and Buffer |
| **Blaine C. White**<br>**Donald J. DeGracia**<br>**Gary S. Krause**<br>**John M. Skjaerlund**<br>**Brian J. O'Neil**<br>**Lawrence I. Grossman** | 125 | Brain Nuclear DNA Survives Cardiac Arrest and Reperfusion |

**Oleg M. Panasenko, Tatyana V. Vol'nova, Ofelia A. Azizova, Yuriy A. Vladimirov** 137 Free Radical Modification of Lipoproteins and Cholesterol Accumulation in Cells Upon Atherosclerosis

*Review Articles*

**Shozo Yamamoto** 149 "Enzymatic" Lipid Peroxidation: Reactions of Mammalian Lipoxygenases

**James D. Adams, Jr., Ifeoma N. Odunze** 161 Oxygen Free Radicals and Parkinson's Disease

171 Announcements & Calendar

I Oxygen Society News

---

Volume 10, Numbers 3/4 1991

CONTENTS

*Symposium in Print*

**William A. Pryor, Susan Shipley Godber** 173 Oxidative Stress Status: An Introduction

**Mark J. Messina** 175 Oxidative Stress Status and Cancer: Methodology Applicable for Human Studies

**William A. Pryor, Susan Shipley Godber** 177 Noninvasive Measures of Oxidative Stress Status in Humans

**N. F. Boyd, V. McGuire** 185 The Possible Role of Lipid Peroxidation in Breast Cancer Risk

**K. N. Jeejeebhoy** 191 In Vivo Breath Alkane as an Index of Lipid Peroxidation

**Jason D. Morrow, L. Jackson Roberts, II** 195 Quantification of Noncyclooxygenase Derived Prostanoids as a Marker of Oxidative Stress

**Michael A. Trush, Thomas W. Kensler** 201 An Overview of the Relationship Between Oxidative Stress and Chemical Carcinogenesis

**Mark K. Shigenaga, Bruce N. Ames** 211 Assays for 8-Hydroxy-2′-Deoxyguanosine: a Biomarker of In Vivo Oxidative DNA Damage

**Charles Vincent Smith** 217 Correlations and Apparent Contradictions in Assessment of Oxidant Stress Status In Vivo

*Review Articles*

**Miral Dizdaroglu** 225 Chemical Determination of Free Radical-Induced Damage to DNA

**Peter Wardman**
**Alberta B. Ross** 243 "Radiation Chemistry" Literature Compilations: Their Wider Value in Free Radical Research

249 Erratum

251 Announcements & Calendar

I Oxygen Society News

---

Volume 10, Number 5 1991

CONTENTS

*Original Contributions*

**Paul Russell**
**Takahiko Yamada**
**Guo-tong Xu**
**Donita Garland**
**J. Samuel Zigler, Jr.** 255 Effects of Naphthalene Metabolites on Cultured Cells From Eye Lens

**Elena Serbinova**
**Valerian Kagan**
**Derick Han**
**Lester Packer** 263 Free Radical Recycling and Intramembrane Mobility in the Antioxidant Properties of Alpha-Tocopherol and Alpha-Tocotrienol

**Sudhir Mehrotra**
**Poonam Kakkar**
**P. N. Viswanathan** 277 Mitochondrial Damage by Active Oxygen Species In Vitro

**Michèle Bernier**
**Yoshiki Kusama**
**Marcel Borgers**
**Luc Ver Donck**
**Oscar Valdes-Aguilera**
**Douglas C. Neckers**
**David J. Hearse** 287 Pharmacological Studies of Arrhythmias Induced by Rose Bengal Photoactivation

**Sergio Giunta**
**Luciano Galeazzi**
**Giuseppe Groppa** 297 An In Vitro Bacterial Model of Cytotoxicity to Living Cells Caused by Dopamine and 6-Hydroxydopamine Oxidation at Physiological pH

**Amram Samuni**
**C. Murali Krishna**
**John Cook**
**Christopher D. V. Black**
**Angelo Russo** 305 On Radical Production by PMA-Stimulated Neutrophils as Monitored by Luminol-Amplified Chemiluminescence

*Review Articles*

**David R. Janero** 315 Therapeutic Potential of Vitamin E Against Myocardial Ischemic-Reperfusion Injury

**Maryvonne Ciavatti**
**Serge Renaud** 325 Oxidative Status and Oral Contraceptive. Its Relevance to Platelet Abnormalities and Cardiovascular Risk

**Simon P. Wolff**
**Zhen Y. Jiang**
**James V. Hunt** 339 Protein Glycation and Oxidative Stress in Diabetes Mellitus and Ageing

353 Erratum

355 Announcements & Calendar

I Oxygen Society News

Volume 10, Number 6 1991

CONTENTS

*Original Contributions*

**Geoffrey R. Fisher**
**Peter L. Gutierrez** 359 The Reductive Metabolism of Diaziquone (AZQ) in the S9 Fraction of MCF-7 Cells: Free Radical Formation and NAD(P)H: Quinone-Acceptor Oxidoreductase (DT-Diaphorase) Activity

**I. Emerit**
**S.H. Khan**
**H. Esterbauer** 371 Hydroxynonenal, A Component of Clastogenic Factors?

**Gerd O. Till**
**Hans P. Friedl**
**Peter A. Ward** 379 Lung Injury and Complement Activation: Role of Neutrophils and Xanthine Oxidase

**Paul J. Tortoriello**
**John F. Riebow**
**Shakuntala Advani**
**Wayne R. Bidlack** 387 The Anomaly of Pyridine Nucleotide Synergism in Carbon Tetrachloride Metabolism

**Marek Luciak**
**Lucjan Pawlicki**
**Józef Kędziora**
**Kazimierz Trznadel**
**Jan Błaszczyk**
**Andrzej Buczyński** 397 Whole Blood Superoxide Anion Generation and Efficiency of Some Erythrocyte Antioxidant Systems During Recombinant Human Erythropoietin Therapy of Uremic Anemia

**Grushenka H.I. Wolfgang**
**Robert A. Jolly**
**Thomas W. Petry** 403 Diquat-Induced Oxidative Damage in Hepatic Microsomes: Effects of Antioxidants

**Stephen R. Thom**
**M. Emin Elbuken** 413 Oxygen-Dependent Antagonism of Lipid Peroxidation

**Garry J. Handelman**
**Frederik J.G.M. van Kuijk**
**Alakananda Chatterjee**
**Norman I. Krinsky** 427 Characterization of Products Formed During the Autoxidation of β-Carotene

*Letters to the Editor*

**Barry Halliwell, Harparkash Kaur, Magnus Ingelman-Sundberg** 439 Hydroxylation of Salicylate as an Assay for Hydroxyl Radicals: A Cautionary Note

**S.P. Sharma, T.J. James** 443 Existence of Bluish-White Fluorescing Age-Pigment — "Pre-Lipofuscin"

**G.E. Eldred, M.L. Katz** 445 The Lipid Peroxidation Theory of Lipofuscinogenesis Cannot Yet Be Confirmed

*Book Review*

**William A. Pryor** 449 *Free Radicals in Biology and Medicine*, edited by Barry Halliwell and John M.C. Gutteridge

451 Announcements & Calendar

453 Volume 10 List of Contents and Author Index

I Oxygen Society News